505-41-19

Interface Requirements Document between EOSDIS Core System (ECS) and the National Oceanic and Atmospheric Administration (NOAA) Affiliated Data Center

Revision A

July 1997

National Aeronautics and Space Administration

Goddard Space Flight Center
Greenbelt, Maryland

Interface Requirements Document
between
EOSDIS Core System (ECS)
and the
National Oceanic and Atmospheric Administration (NOAA)
Affiliated Data Center (ADC)

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Preface

This document is a formal contract deliverable with an approval code 1 and requires Government review and approval prior to acceptance and use. Following approval, Class I changes to this document (i.e., those affecting cost or schedule) require Government approval prior to acceptance and use. Class II changes to this document (i.e., those not affecting cost or schedule) may be approved within the Hughes ECS Project and enacted without Government approval. All changes to this document shall be made by document change notice (DCN) or by complete revision.

This document has been placed under ESDIS Project Configuration Control. Any questions or proposed changes should be addressed to:

Configuration Management Office
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Abstract

The Earth Observing System Data and Information System (EOSDIS) Core System (ECS) is a ten year project involving the collection and distribution of data from space- and ground-based measurement systems to provide the scientific basis for understanding global change. Using ECS as its window to the EOSDIS, the international science community will be able to access data from a distributed archive in the United States and from other international Earth Science support systems. To accomplish this mission, it is necessary for ECS to interface with a wide variety of external systems. This document represents the requirements to provide an interface between the ECS and the National Oceanic and Atmospheric Administration (NOAA) Affiliated Data Center (ADC).

The ECS contractor team used the process described in the ECS *Methodology for Definition of External Interfaces* document to develop these interface requirements. Memoranda of Understanding (MOUs) and Level 2 and Level 3 Requirement Specifications were used in the methodology to develop this formal Interface Requirement Document (IRD). The ESDIS Project has responsibility for maintenance of this IRD and joint responsibility with the NOAA for its development.

The ECS and the NOAA ADC will work in coordination to allow the exchange of data and information. The ECS will be interoperable with the NOAA so that an ECS user will be able to view the data holdings of, and order data from, NOAA. In addition, NOAA will provide mutually-agreed ancillary data sets to the ECS to support ECS standard product generation; these data sets are documented in Appendix B of this IRD.

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Change Information Page

ISSUE	DATE	PAGES AFFECTED	DESCRIPTION
Baseline	05/15/95	All	CCR 505-41-19-001
CH01	07/10/96	v, vii, B-1	CCR 505-41-19-002
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Revision A	07/23/97	All	CCR 505-41-19-004-A

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List of Affected Pages

Page No.	Revision	Page No.	Revision	Page No.	Revision	Page No.	Revision
Title	Revision A	4-6	Revision A				
i	Revision A	4-7	Revision A				
ii	Revision A	4-8	Revision A				
iii	Revision A	5-1	Revision A				
iv	Revision A	5-2	Revision A				
v	Revision A	5-3	Revision A				
vi	Revision A	5-4	Revision A				
vii	Revision A	6-1	Revision A				
viii	Revision A	6-2	Revision A				
ix	Revision A	A-1	Revision A				
x	Revision A	A-2	Revision A				
xi	Revision A	B-1	Revision A				
xii	Revision A	B-2	Revision A				
xiii	Revision A	AB-1	Revision A				
xiv	Revision A	AB-2	Revision A				
1-1	Revision A	AB-3	Revision A				
1-2	Revision A	AB-4	Revision A				
2-1	Revision A						
2-2	Revision A						
3-1	Revision A						
3-2	Revision A						
3-3	Revision A						
3-4	Revision A						
4-1	Revision A						
4-2	Revision A						
4-3	Revision A						
4-4	Revision A						
4-5	Revision A						

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Contents

4. Operational Context and Data Flow

5. Functional and Performance Interface Requirements

6. Interface Control Documentation Plan

Figures

Tables

Appendix A. Requirements Trace

Appendix B. NOAA Ancillary Data Sets

Abbreviations and Acronyms

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1. Introduction

1.1 Identification

This Interface Requirement Document (IRD), Contract Data Requirements List (CDRL) item 039, whose requirements are specified in Data Item Description (DID) 219/SE1, is a required deliverable under the Earth Observing System Data and Information System (EOSDIS) Core System (ECS), Contract (NAS5-60000). It defines the interface requirements between ECS and the National Oceanic and Atmospheric Administration (NOAA) Affiliated Data Center (ADC).

1.2 Scope

This IRD defines all of the system interfaces that exist between ECS and NOAA. EOSDIS Version 0 is a separate system from ECS; the interfaces between the ECS and Version 0 are addressed in the ECS/V0 IRD and those between Version 0 and NOAA are best addressed in the NOAA-SAA IMS Server Design Specification.

The Earth Science Data and Information System (ESDIS) Project has joint responsibility with NOAA for the development and maintenance of this IRD. Any changes in the interface requirements must be agreed to by the relevant participating parties, and then assessed at the ESDIS Project Level. This IRD will be approved under the signatures of the ESDIS Project Manager and the NOAA National Environmental Satellite, Data, and Information Service (NESDIS) Deputy Assistant Administrator.

1.3 Purpose and Objectives

This document was written to formalize the interpretation and general understanding of the interface between the ECS and the NOAA. This document provides a point of mutual control of external interface definitions and will only be changed under mutual approval of the ESDIS Project and NOAA.

1.4 Status and Schedule

This document has been approved by the ECS Contractor Configuration Control Board (CCB) as a final IRD. As a formal contract deliverable with approval Code 1, this document requires Government review and approval prior to its acceptance and use. At the Government's option, this document may be designated to be under full Government CCB control.

Changes may be submitted for consideration by Contractor and Government CCBs under the normal change process at any time

1.5 Document Organization

This Interface Requirements Document is organized as described below.

Section 1	Introduction - Introduces the IRDs scope, purpose, objectives, status, schedule, and organization.
Section 2	Related Documentation - Provides a bibliography of reference documents for the IRD organized by parent, applicable, and information subsections.
Section 3	Systems Description - Provides an overview of both systems and a discussion of the system components involved in the interface. A context diagram depicting the functional interfaces is also included.
Section 4	Data Flow Descriptions - Provides a discussion of how the interface is used from an operational point of view. A table is also provided to summarize the data flows.
Section 5	Interface Requirements - Functional requirements are presented.
Section 6	Interface Control Documentation Plan - Identifies and summarizes the ICD(s) that will spawn from this IRD.
Appendix A	Requirements Trace
Appendix B	NOAA Ancillary Data Sets - Lists NOAA data sets required for ECS standard product generation.

2. Related Documents

2.1 Parent Documents

The following documents are the parents from which this document's scope and content are derived:

	Memorandum of Understanding Between the National Aeronautics and Space Administration and the National Oceanic and Atmospheric Administration for Earth Observations Remotely Sensed Data Processing, Distribution, Archiving, and Related Science Support, 7/89
193-208-SE1-001	Methodology for Definition of External Interfaces for the ECS Project, 6/94
423-41-02	Functional and Performance Requirements Specification for the Earth Observing System Data and Information System (EOSDIS) Core System, 11/94
301-CD-002-003	System Implementation Plan for the ECS Project, 1/95
423-10-01-1	Rev. A; Earth Science Data and Information System (ESDIS) Project Level 2 Requirements, EOSDIS Core System (ECS), Vol. 1, 1/27/93
423-41-01	EOSDIS Core System Statement of Work, 9/8/94

2.2 Applicable Documents

The following documents are referenced herein and are directly applicable to this document. In the event of conflict between any of these documents and this document, this document shall take precedence.

505-41-11	Interface Requirements Document Between EOSDIS Core System (ECS) and the Version 0 System, 11/96
505-41-40	Interface Control Document Between EOSDIS Core System (ECS) and the Goddard Space Flight Center (GSFC) Distributed Active Archive Center (DAAC), 12/96
	Committee on Earth Observations Satellites Working Group on Data: Guidelines for an International Interoperable Catalogue System; Catalogue Subgroup Issue 2.1; 4/93

2.3 Information Documents

The following documents, although not directly applicable, amplify or clarify the information presented in this document, but are not binding.

540-032	Interface Control Document (ICD) Between the Earth Observing System (EOS) Data and Information System (EOSDIS) Backbone Network (EBnet) and Distributed Active Archive Centers (DAAC)
604-CD-001-004	Operations Concept for the ECS Project: Part 1 - ECS Overview, 6/95
none	NOAA-SAA IMS Server Design Specification, 5/94

3. Systems Descriptions

3.1 Systems Relationship Overview

The ECS and the NOAA ADC will work in coordination to allow the exchange of data and information. The ECS will be interoperable with the NOAA so that an ECS user will be able to view the data holdings of, and order data from, NOAA. In addition, NOAA will provide mutually-agreed ancillary data sets to the ECS to support ECS standard product generation; these data sets are documented in Appendix B.

Sections 3.2 and 3.3 provide overviews of the ECS and the NOAA ADC to form a basis for understanding the interface requirements between them.

3.2 EOSDIS Core System (ECS)

3.2.1 ECS Overview

The ECS, the EOS Data and Operations System (EDOS), and the EOSDIS Backbone Network (EBnet) are components of the EOSDIS. ECS supports the planning, scheduling, and control of U.S. EOS spacecraft and instruments. In addition to fully supporting the EOS mission, the ECS provides information management and data archive and distribution functions for NASA Earth science flight missions, NASA instruments flown on non-NASA spacecraft, and for other NASA-held Earth science data. NASA will distribute NOAA data only for NASA internal and cooperative activities; NASA will not serve as a general distribution source for NOAA data.

3.2.2 ECS Segments

ECS is composed of three segments defined to support three major operational areas: flight operations, science data processing, and communications/system management. The ECS segments are described below:

a. The Flight Operations Segment (FOS) manages and controls the EOS spacecraft and instruments. The FOS includes the EOS Operations Center (EOC), which is responsible for mission planning, scheduling, control, monitoring, and data analysis in support of mission operations for U.S. EOS spacecraft and instruments. The ECS EOC is located at the Goddard Space Flight Center (GSFC). The FOS also provides investigator-site ECS software (the Instrument Support Terminal [IST] toolkit) to connect a Principal Investigator (PI) or Team Leader (TL) to the FOS in remote support of instrument control and monitoring. (Investigator facilities are outside the FOS, but connected to it by way of the EOSDIS Science Network [EBnet] Wide Area Network [WAN].)

b. The Science Data Processing Segment (SDPS) provides a set of ingest, processing, and distribution services for science data and a data information system for the entire EOSDIS. The SDPS processes data from the EOS instruments to Level 1-4 data products. The SDPS also provides short- and long-term storage for EOS, other Earth observing missions, and other related data, software, and results, and distributes the data to EOSDIS users. The SDPS contains a distributed data and information management function and user services suite for the ECS, including a catalog system in support of user data selection and ordering. SDPS elements will be distributed at the following Distributed Active Archive Centers (DAACs):

1. Goddard Space Flight Center (GSFC), Greenbelt, Maryland
2. Earth Resources Observation System (EROS) Data Center (EDC), Sioux Falls, South Dakota
3. Jet Propulsion Laboratory (JPL), Pasadena, California
4. Langley Research Center (LaRC), Hampton, Virginia
5. University of Colorado, National Snow and Ice Data Center (NSIDC), Boulder, Colorado
6. University of Alaska, Alaska Synthetic Aperture Radar (SAR) Facility (ASF), Fairbanks, Alaska[1]
7. *(Deleted)*
8. Oak Ridge National Laboratory (ORNL), Oak Ridge, Tennessee[1]
9. Socioeconomic Data and Applications Center (SEDAC), Saginaw, Michigan[2]

Notes: [1]These DAACs have no ECS-provided product generation capability.

[2]The ECS will provide no hardware or operations support to the SEDAC, but will make ECS software available for reuse.

c. The Communications and System Management Segment (CSMS) provides overall ECS management of ECS ground system resources, provides communications/networking services for an extensive science data communications network, and manages the interfaces to the EBnet, the NASA Communications (Nascom) Local Area Network (NOLAN), and the NASA Science Internet (NSI). The CSMS also includes the EBnet, which consists of a dedicated internal ECS Wide Area Network (WAN) with circuits provided by the Program Support Communications Network (PSCN); Local Area Networks (LANs) at each of the DAACs and the EOC to support ECS operations; connections to International Partners (IPs); and interfaces at DAACs with EBnet, NOLAN, and NSI. The CSMS System Management Center (SMC), along with local system management capabilities at DAAC sites and the EOC, provides system management services for ECS ground system resources. Most of the operations staff is

considered part of the SDPS or FOS, including Local System Management (LSM) operators.

3.3 National Oceanic and Atmospheric Administration (NOAA) Affiliated Data Center (ADC)

The ECS interface with NOAA will support two distinct functions. The first function is to allow ECS users to search and access data resident in the NOAA ADC. The second function is to support timely ECS access to NOAA data sets which are required as ancillary data for the generation of ECS standard products.

Figure 3-1 depicts the operational context of the interfaces between the ECS and the NOAA ADC. The ECS will interface directly with the NOAA Satellite Active Archive (SAA), the NOAA Central Environmental Monitoring Satellite Computer System (CEMSCS), and the NOAA Data Centers. The NOAA Data Centers include the National Oceanographic Data Center (NODC) in Washington, DC; the National Geophysical Data Center (NGDC) in Boulder, CO; and the National Climatic Data Center (NCDC) in Asheville, NC.

ECS has an indirect interface with the NOAA National Center for Environmental Prediction (NCEP). NCEP, part of the National Weather Service, produces, processes, handles, and distributes meteorological and oceanographic information to users. ECS will acquire ancillary data sets from the NCEP via the Larry server at the GSFC DAAC. The interface between the GSFC DAAC and ECS for transfer of NCEP data is described in the ICD between the ECS and the GSFC DAAC.

NOAA is developing an SAA to provide a mechanism for improved access to NOAA satellite products. The SAA is located in Suitland, Maryland. The SAA/ECS interface will support one-way Level 2 or Level 3 catalog interoperability (as defined by the Committee on Earth Observations Satellites [CEOS]). This interface will support ECS user access of SAA datasets.

The CEMSCS supports distribution of NOAA satellite datasets to its customers. The CEMSCS is located in Suitland, Maryland. The ECS/CEMSCS interface will support delivery of ancillary data to the ECS.

One of the roles of the NOAA Data Centers is to serve as long-term archives of all in situ and remotely-sensed data. The interface between the ECS and the NOAA Data Centers will support Level 1 catalog interoperability (as defined by the CEOS). The NOAA Data Centers will furnish advertising information (directory-level catalog information) describing their data holdings to the ECS. ECS will provide the capability for an ECS user to search this metadata and link (transfer the user's session) to the Data Centers. The interface between ECS and the NOAA Data Centers will also support delivery of ancillary data to the ECS.

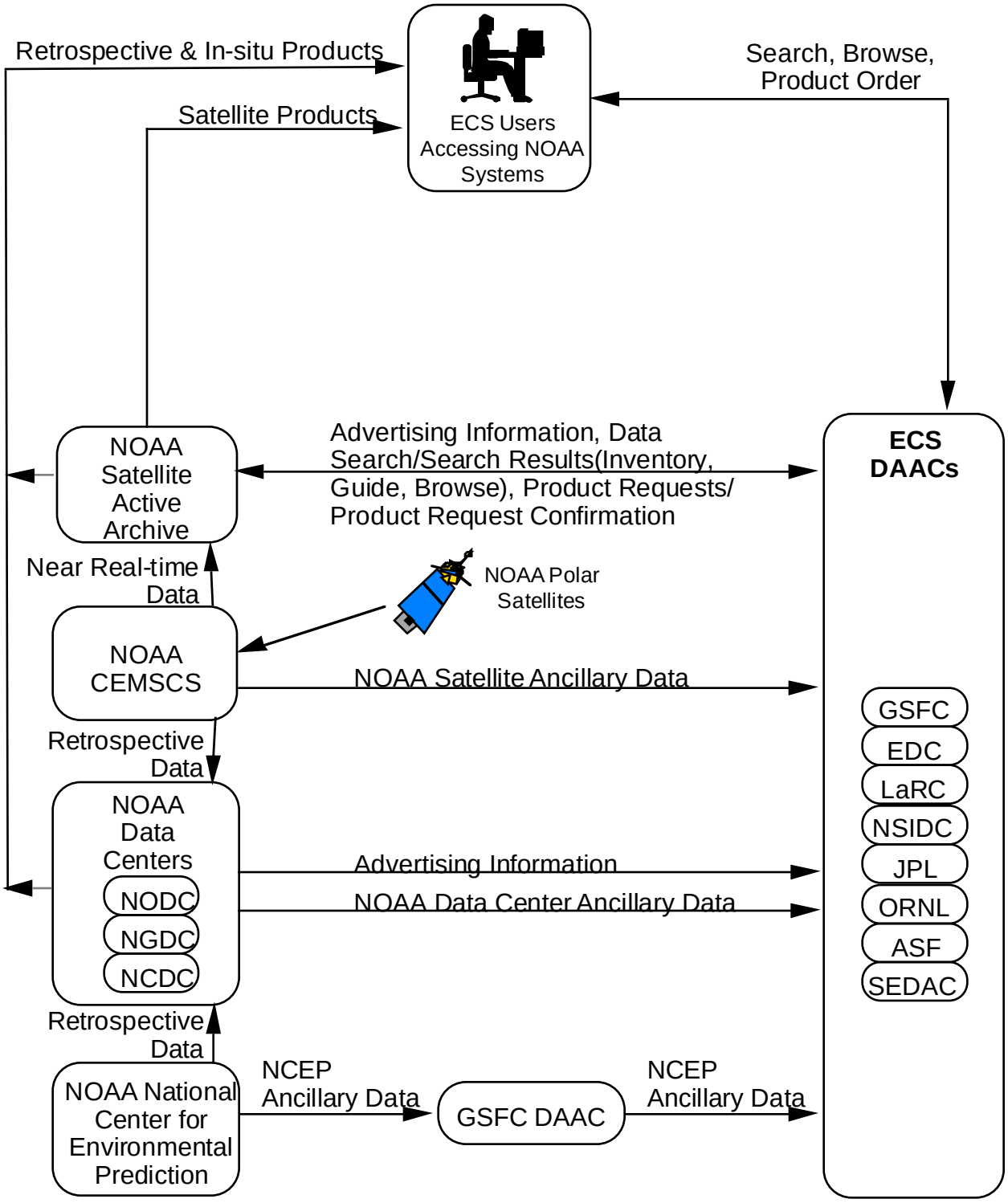


Figure 3-1. ECS/NOAA Interface Context Diagram

4. Operational Context and Data Flow

4.1 Overview

The data flows between the ECS and the NOAA ADC are described in Section 4.2. The networks that will support the interface are discussed in Section 4.3.

4.2 ECS/NOAA Data Flows

The data flows between the NOAA ADC and the ECS are described in four sections. The ECS/SAA interface is described in section 4.2.1. The ECS/NCEP interface is described in section 4.2.2. The interfaces between the ECS and the NOAA Data Centers are described in section 4.2.3. The interface between the ECS and the NOAA CEMSCS is described in section 4.2.4.

Table 4-1 provides a summary of the ECS/NOAA data flows. This table shows the physical source and destination of the flow, the data flow name, a short description of the data flow, and the network or communications link supporting the interface. Table 4-1 also features a unique key number for each data flow; throughout this section, and in the accompanying data flow diagrams, each data flow will appear with its key number.

4.2.1 ECS/SAA Data Flows

Figure 4-1 is a top-level representation of the ECS/SAA data flows. For purposes of discussion, the data flows are organized into three categories: information management, product delivery, and network management. The data flows involving information management are expanded in Figures 4-2 and 4-3 and are described in Section 4.2.1.1. The ECS/SAA data flows supporting product delivery are described in Section 4.2.1.2. The ECS/SAA network management interface is described in Section 4.2.1.3.

4.2.1.1 Information Management

The ECS will interface with the SAA to allow ECS users to search, browse, and order data products from the SAA. This interface will support one-way Level 2 or Level 3 catalog interoperability (as defined by the CEOS). The information management data flows supporting this catalog interoperability are depicted in Figures 4-2. Figure 4-2 depicts an ECS user accessing the SAA.

The following scenario describes an ECS user accessing the SAA. The SAA will send directory-level advertising information [key number 2] to ECS to advertise its holdings to ECS users. When a query issued by an ECS user is mapped to the SAA, the user will have the option to limit the search or to continue the search at the SAA.

The user may then generate queries to search SAA guide and inventory metadata, or to browse

particular SAA products [key numbers 7, 11, 15]. The SAA will reply with the requested data [key numbers 8, 12, and 16, respectively]. User authentication information is embedded within the inventory query , browse request, and product request [key numbers 11, 15, 23]. A cost estimate request is embedded in the inventory search request [key number 11]. The cost estimate is returned via the inventory query result [key number 12]. The user can order available products [key number 23]. Upon receipt of a user product request by the SAA, a product request confirmation message [key number 42] is returned. This message provides confirmation of receipt of the order and provides contact information for further inquiries regarding the order. The user may obtain the product delivery status by contacting the SAA directly.

4.2.1.2 Product Delivery

SAA products requested by ECS users (i.e., users accessing the SAA via the ECS) will be distributed by the SAA directly to the users; the SAA will send billing information for these products directly to the users.

The ECS/SAA interface does not support the delivery of ancillary data transfer to ECS.

4.2.1.3 Network Management

The ECS will acquire network management data from EBnet in order to facilitate network management [key number 33].

The ECS and the SAA will also coordinate directly regarding network management issues at either the ECS or the SAA. This coordination will take place via telephone. Network management will include network fault, performance, and security management. The data flows are depicted in Figure 4-1.

4.2.2 ECS/NCEP Data Flows

The interface between the NOAA NCEP and the ECS via the GSFC DAAC will provide ECS access to NCEP data sets required as ancillary data to support ECS standard product generation. The data sets are specified in Appendix B. These data sets are detailed in the ICD Between ECS and the GSFC DAAC.

4.2.3 ECS/NOAA Data Centers Data Flows

The purpose of the interface between the ECS and the NOAA Data Centers is to facilitate ECS user access to data held at those centers and to provide ancillary data for the production of ECS standard products. The data flows are depicted in Figure 4-5.

4.2.3.1 Information Management

The interface will support Level 1 catalog interoperability (as defined by the CEOS). The NOAA Data Centers will provide directory-level information advertising their holdings to the ECS [key number 39]. When an ECS user search of this information reveals data of interest to be located at a data center, the user will have the option to link to the information systems at that data center.

4.2.3.2 Delivery of Data Sets to Support ECS Standard Product Generation

NOAA Data Center products will be distributed by the NOAA Data Centers to the ECS to support the generation of standard products by ECS. The product delivery data flows which support ECS standard product generation are depicted in Figure 4-5. The ECS will notify the Data Centers of data sets required as ancillary data for ECS standard product generation; the Data Centers will provide these data sets to the ECS [key number 40] in mutually-agreed formats according to mutually-agreed service level agreements. The data sets are specified in Appendix B. Three alternate methods are available for data delivery. The ECS may either poll and pull the data or the Data Center may push the data. The Data Centers may also deliver the data sets via mutually agreed physical media.

The ECS and the Data Centers will coordinate via telephone for the purpose of schedule adjudication; this coordination is limited to the explanation and resolution of ancillary data delivery scheduling conflicts.

4.2.4 ECS/CEMSCS Data Flows

The interface between the NOAA CEMSCS and the ECS will provide ECS access to CEMSCS data sets required as ancillary data to support ECS standard product generation.

4.2.4.1 Delivery of Data Sets to Support ECS Standard Product Generation

The product delivery data flows which support ECS standard product generation are depicted in Figure 4-6. The ECS will notify NOAA of the CEMSCS data sets required as ancillary data for ECS standard product generation; the CEMSCS will use the ftp “put” command to provide these data sets to the ECS [key number 41] in mutually-agreed formats according to mutually-agreed service level agreements. The data sets are specified in Appendix B.

4.2.4.2 Network Management

The ECS will acquire network management data from EBnet in order to facilitate network management [key number 33].

The ECS and the CEMSCS will also coordinate directly regarding network management issues at either the ECS or the NOAA ADC. This coordination will take place via telephone. Network management will include network fault, performance, and security management. The data flows are depicted in Figure 4-6.

4.3 Networks

The NOAA SAA, CEMSCS, and Data Centers may communicate with the ECS via both the NASA Science Internet (NSI) and the EOSDIS Backbone Network (EBnet), or only via NSI, based on their specific requirements. EBnet is intended for ECS mission essential use; it will transfer data between sites to support ECS data production. NSI is intended for ECS mission fulfillment use; it will provide data to ECS users in response to queries and searches.

The ECS will support communications using the Transport Control Protocol/Internet Protocol (TCP/IP) protocol suite.

Table 4-1. ECS/NOAA Data Flows (1 of 2)

Key #	From	To	Data Item	Data Flow Description	Release	Network
1	Deleted	Deleted	Deleted	Deleted		Deleted
2	SAA	ECS	Advertising Information	Directory-level information on data sets which is used by the ECS to determine SAA data holdings. May include dependent valids.	B.0	EBnet/NSI
3	Deleted	Deleted	Deleted	Deleted		Deleted
4	Deleted	Deleted	Deleted	Deleted		Deleted
5	Deleted	Deleted	Deleted	Deleted		Deleted
6	Deleted	Deleted	Deleted	Deleted		Deleted
7	ECS	SAA	Guide Query	ECS Request for SAA Guide Data	B.0	EBnet/NSI
8	SAA	ECS	Guide Query Results	SAA Guide Data	B.0	EBnet/NSI
9	Deleted	Deleted	Deleted	Deleted		Deleted
10	Deleted	Deleted	Deleted	Deleted		Deleted
11	ECS	SAA	Inventory Query	ECS Request for SAA Inventory Search	B.0	EBnet/NSI
12	SAA	ECS	Inventory Query Results	SAA Inventory Search Results	B.0	EBnet/NSI
13	Deleted	Deleted	Deleted	Deleted		Deleted
14	Deleted	Deleted	Deleted	Deleted		
15	ECS	SAA	Browse Request	ECS Request for SAA Browse Data	B.0	EBnet/NSI
16	SAA	ECS	Browse Results	SAA Browse Data	B.0	EBnet/NSI
17	Deleted	Deleted	Deleted	Deleted		Deleted
18	Deleted	Deleted	Deleted	Deleted		Deleted
19	Deleted	Deleted	Deleted	Deleted		Deleted
20	Deleted	Deleted	Deleted	Deleted		Deleted
21	Deleted	Deleted	Deleted	Deleted		Deleted
22	Deleted	Deleted	Deleted	Deleted		Deleted
23	ECS	SAA	Product Request	ECS User Request for SAA Product	B.0	EBnet/NSI
24	Deleted	Deleted	Deleted	Deleted		Deleted

Table 4-1. ECS/NOAA Data Flows (2 of 2)

Key #	From	To	Data Item	Data Flow Description	Release	Network
25	Deleted	Deleted	Deleted	Deleted		Deleted
26	Deleted	Deleted	Deleted	Deleted		Deleted
27	Deleted	Deleted	Deleted	Deleted		Deleted
28	Deleted	Deleted	Deleted	Deleted		Deleted
29	Deleted	Deleted	Deleted	Deleted		Deleted
30	Deleted	Deleted	Deleted	Deleted		Deleted
31	Deleted	Deleted	Deleted	Deleted		Deleted
32	Deleted	Deleted	Deleted	Deleted		Deleted
33	EBnet	ECS	Network Management	ECS will accept network management data from EBnet	B.0	EBnet/NSI
34	Deleted	Deleted	Deleted	Deleted		Deleted
35	Deleted	Deleted	Deleted	Deleted		Deleted
36	Deleted	Deleted	Deleted	Deleted		Deleted
37	Deleted	Deleted	Deleted	Deleted		Deleted
38	NCEP	ECS	Ancillary Data	NCEP data sets to be used as ancillary data for ECS standard product generation. These data will be ingested into ECS via the GSFC DAAC.	B.0	EBnet
39	NOAA Data Centers	ECS	Advertising Information	Directory-level information describing the NOAA Data Centers' data holdings.	B.0	EBnet/NSI
40	NOAA Data Centers	ECS	Ancillary Data	NOAA Data Center products received by the ECS as ancillary data for ECS standard product generation.	B.0	EBnet/NSI
41	NOAA CEMSCS	ECS	Ancillary Data	CEMSCS products received by the ECS as ancillary data for ECS standard product generation.	B.0	EBnet
42	NOAA SAA	ECS	Product Request Confirmation	NOAA SAA Confirmation of Product Request receipt	B.0	EBnet/NSI

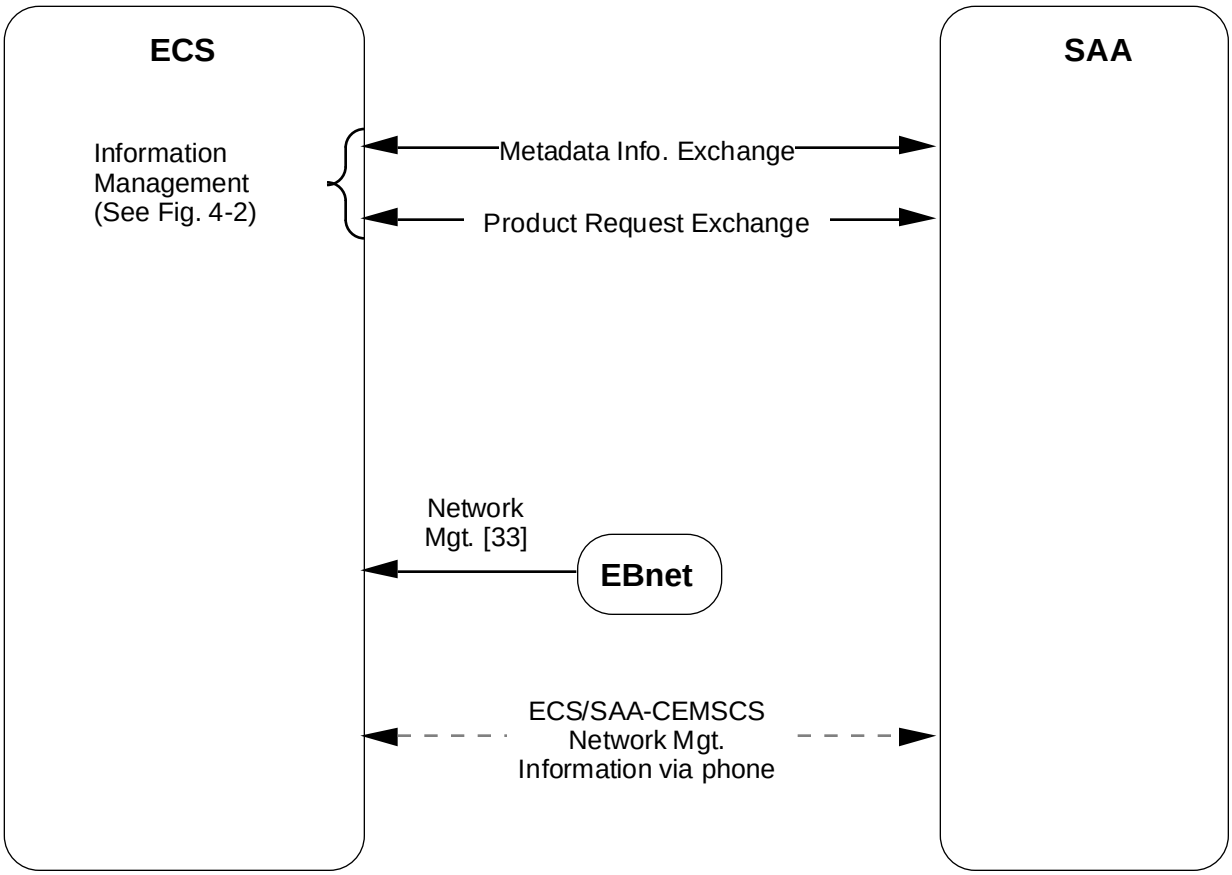
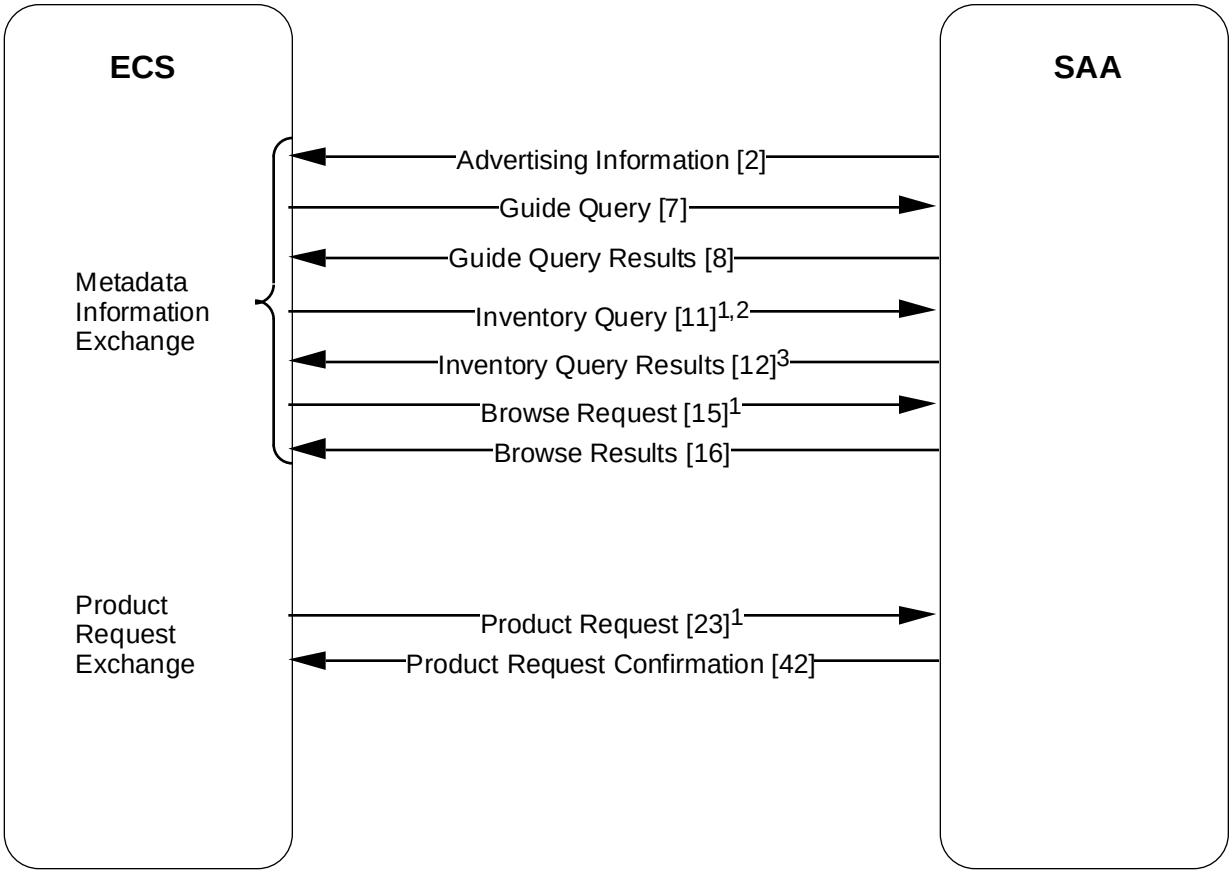


Figure 4-1. ECS/NOAA Data Flow Summary



1 Contains User Authentication information
2 Contains Cost Estimate Request
3 Contains Cost Estimate

Figure 4-2. ECS (User)/SAA Information Management Data Flows

Figure 4-3. (Deleted)

Figure 4-4. (Deleted)

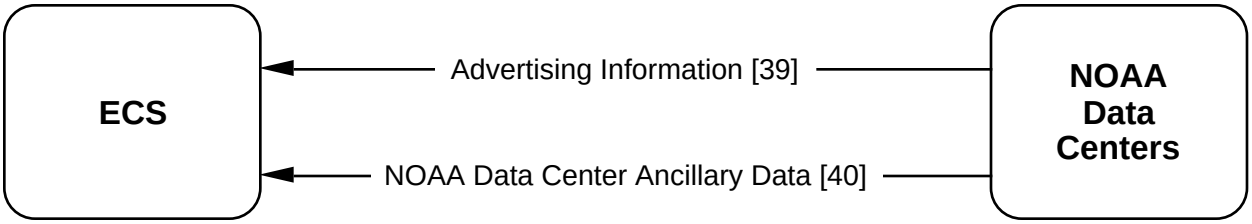


Figure 4-5. ECS/NOAA Data Centers Data Flows

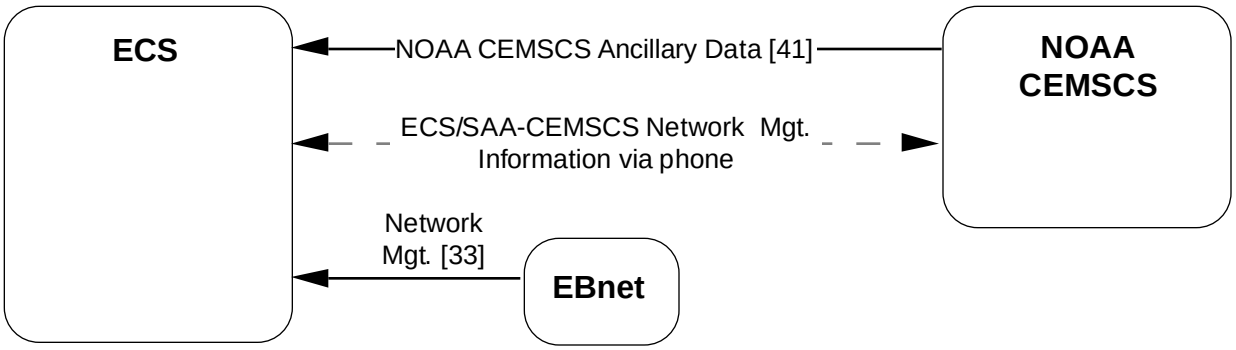


Figure 4-6. ECS/NOAA CEMSCS Data Flows

5. Functional and Performance Interface Requirements

5.1 Requirements Trace

The functional and performance interface requirements identified in this document have been traced to the ECS Functional and Performance Requirements Specification (F&PRS). Appendix A, Table A-1 of this document provides a listing of each IRD requirement by requirement number and an identification of its parent requirements as found in the F&PRS.

5.2 Functional Interface Requirements

NOAA0010 The interface between the ECS and the SAA shall support one-way Level 2 or 3 catalog interoperability as defined by the CEOS.

NOAA0020 The ECS shall maintain a controlled list of the mutually-agreed data sets required from the NOAA ADC to support ECS standard product generation.

NOAA0030 The interface providing catalog interoperability between the ECS and the SAA shall support the V0 protocol.

NOAA0100 The SAA shall have the capability to send and the ECS shall have the capability to receive advertising information.

NOAA0110 (Deleted)

NOAA0120 (Deleted)

NOAA0130 (Deleted)

NOAA0140 (Deleted)

NOAA0150 The ECS shall have the capability to send and the SAA shall have the capability to receive User Authentication Information.

NOAA0200 (Deleted)

NOAA0210 The ECS shall have the capability to send and the SAA shall have the capability to receive Guide Queries.

NOAA0220 The SAA shall have the capability to send and the ECS shall have the capability to receive Guide Query Results.

NOAA0230 (Deleted)

NOAA0240 (Deleted)

NOAA0250 The ECS shall have the capability to send and the SAA shall have the capability to receive Inventory Queries.

NOAA0260 The SAA shall have the capability to send and the ECS shall have the capability to receive Inventory Query Results.

NOAA0270 (Deleted)

NOAA0280 (Deleted)

NOAA0290 The ECS shall have the capability to send and the SAA shall have the capability to receive Browse Requests.

NOAA0300 The SAA shall have the capability to send and the ECS shall have the capability to receive Browse Results.

NOAA0310 (Deleted)

NOAA0320 (Deleted)

NOAA0330 The ECS shall have the capability to send and the SAA shall have the capability to receive Cost Estimate Requests via the Inventory Query.

NOAA0340 The SAA shall have the capability to send and the ECS shall have the capability to receive Cost Estimates via the Inventory Query Result.

NOAA0350 (Deleted)

NOAA0400 (Deleted)

NOAA0410 The ECS shall have the capability to send and the SAA shall have the capability to receive Product Requests.

NOAA0420 (Deleted)

NOAA0430 (Deleted)

NOAA0440 The SAA shall have the capability to send and the ECS shall have the capability to receive Product Request Confirmation.

NOAA0450 (Deleted)

NOAA0460 (Deleted)

NOAA0510 The CEMSCS shall have the capability to send and the ECS shall have the capability to receive data sets to be used as ancillary data for ECS standard product generation.

NOAA0520 (Deleted)

NOAA0530 (Deleted)

NOAA0560 The CEMSCS and the ECS shall have the capability to perform ancillary data Schedule Adjudication via telephone.

NOAA0570 (Deleted)

NOAA0580 (Deleted)

NOAA0600 The ECS shall have the capability to receive Network Management information from EBnet.

NOAA0610 (Deleted)

NOAA0620 The ECS and the NOAA SAA and CEMSCS shall have the capability to coordinate Network Management issues via telephone.

NOAA0700 (Deleted)

NOAA0710 The NCEP shall have the capability to send via the GSFC DAAC and the ECS shall have the capability to receive via the GSFC DAAC data sets to be used as ancillary data for ECS standard product generation.

NOAA0720 (Deleted)

NOAA0730 (Deleted)

NOAA0800 The NOAA Data Centers shall have the capability to send and the ECS shall have the capability to receive advertising information.

NOAA0810 The NOAA Data Centers and the ECS shall have the capability to perform ancillary data Schedule Adjudication via telephone.

NOAA0820 The NOAA Data Centers shall have the capability to send and the ECS shall have the capability to receive data sets requested by ECS as ancillary data for ECS standard product generation.

5.3 Performance Interface Requirements

Performance parameters for ancillary data ingest are specified in Appendix B.

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6. Interface Control Documentation Plan

The ICD which corresponds to this IRD will be entitled *Interface Control Document Between the EOSDIS Core System (ECS) and the National Oceanic and Atmospheric Administration (NOAA) Affiliated Data Center (ADC).* This ICD defines the functional and physical design of each interface between the ECS and the NOAA ADC, and includes the precise data contents and format of each interface. All modes (options) of data exchange for each interface are described as well as the conditions required for each mode or option. Additionally, data rates, duty cycles, error conditions, and error handling procedures are included. The sequence of exchanges is completely described (e.g., required handshaking.) Communications protocols or physical media are detailed for each interface.

The ICD provides a point of mutual control of external interface definitions via the ESDIS Project CCB. For review of the ICD, that CCB will include representatives from NOAA. Development of the ICD is the responsibility of the ECS contractor, with support from the NOAA. The preliminary ICD was delivered at the ECS Preliminary Design Review (PDR); the final ICD was delivered at ECS Critical Design Review (CDR).

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Appendix A. Requirements Trace

Table A-1. Requirements Trace (1 of 2)

ECS/NOAA IRD Requirement	*ECS Functional and Performance Requirements Specification*
NOAA0010	IMS-0620
NOAA0020	Derived (SDPS0020)
NOAA0030	Derived (EOSD1710)
NOAA0100	IMS-0380, IMS-0600, EOSD1710
NOAA0110	(Deleted)
NOAA0120	(Deleted)
NOAA0130	(Deleted)
NOAA0140	(Deleted)
NOAA0150	SMC-5320
NOAA0200	(Deleted)
NOAA0210	IMS-0620, IMS-0860, IMS-0870
NOAA0220	IMS-0620, IMS-0860, IMS-0870
NOAA0230	(Deleted)
NOAA0240	(Deleted)
NOAA0250	IMS-0620, IMS-0860, IMS-0870
NOAA0260	IMS-0620, IMS-0860, IMS-0870
NOAA0270	(Deleted)
NOAA0280	(Deleted)
NOAA0290	IMS-0620, IMS-0860, IMS-0870
NOAA0300	IMS-0620, IMS-0860, IMS-0870, EOSD-1502
NOAA0310	(Deleted)
NOAA0320	(Deleted)
NOAA0330	IMS-1350
NOAA0340	IMS-1350
NOAA0350	(Deleted)
NOAA0400	(Deleted)
NOAA0410	IMS-0880, IMS-1290, EOSD1710
NOAA0420	(Deleted)
NOAA0430	(Deleted)
NOAA0440	IMS-1310, EOSD1710
NOAA0450	(Deleted)
NOAA0460	(Deleted)
NOAA0510	SDPS0020, DADS0145, EOSD1710, EOSD-1502

Table A-1. Requirements Trace (2 of 2)

ECS/NOAA IRD Requirement	*ECS Functional and Performance Requirements Specification*
NOAA0520	(Deleted)
NOAA0560	SMC1500, EOSD1710
NOAA0570	(Deleted)
NOAA0580	(Deleted)
NOAA0600	EOSD1710
NOAA0610	(Deleted)
NOAA0620	SMC1500, EOSD1710
NOAA0700	(Deleted)
NOAA0710	SDPS0020, DADS0145, EOSD1710
NOAA0720	(Deleted)
NOAA0730	(Deleted)
NOAA0800	IMS-0380, IMS-0600, EOSD1710
NOAA0810	SMC-1500, EOSD1710
NOAA0820	SDPS0020, DADS0145, EOSD1710, EOSD-1502

Appendix B. NOAA Ancillary Data Sets

Table B-1. NOAA Ancillary Data Sets (1 of 2)

#	Product Name	Source[1]	Approx. Volume	Frequency Available (A) or Ingested (I)[2]	Timeliness[3]	ECS Release	Required By
1	Third Generation Global Vegetation Index	NESDIS/CEMSCS	8 files @ 2.3 MB per file	Weekly (A)	4 days	B.0	CERES, DAO
2	Aerosol Global Analyzed Field	NESDIS/CEMSCS	1 file @ 1.4 MB	Weekly (A)	4 days	B.0	CERES, ASTER
3	Snow/Ice Cover (Navy Algorithm)	NESDIS/CEMSCS	4 files @ 10.5 MB per file	Daily (I)	13 hours	B.0	CERES, ASTER, SeaWinds
4	SBUV/2 Stratospheric Ozone Profiles	NESDIS/CEMSCS	2 files @ 1.7 MB per file	Daily (I)	13 hours	B.0	CERES, ASTER
5	HIRS/2 Column Ozone	NESDIS/CEMSCS	2 files @ 21 MB per file	Daily (I)	13 hours	B.0	CERES
6	NCEP 2.5-Degree Final Analysis and Forecast System, Global Analysis (FNL)	NCEP	1 MB	4x/day (A)	4 hours	B.0	CERES, TSDIS, ASTER, MOPITT, MISR, SeaWinds
7	NCEP 1-Degree Medium Range Forecast System, Forecast at 00Z (MRF)	NCEP	10 MB	Daily (A) (1 twenty file set per day)	13 hours	B.0	CERES, MISR, MODIS
8	(Deleted)						

[1] NCEP data sets will be available from the GSFC DAAC.

[2] (A) Refers to the frequency with which the product is updated by NOAA. (I) refers to the frequency with which the product is ingested by the ECS.

[3] Refers to the maximum time between availability at NOAA (GSFC DAAC for NMC data) and acquisition by the ECS.

Table B-1. NOAA Ancillary Data Sets (2 of 2)

9	NCEP 1-Degree Global Data Assimilation Model (GDAS) Product	NCEP	1.97 MB	4x/day (A)	5 hours	B.0	MODIS
10	NCEP Ship/Buoy Observations (Locations)	NCEP	1 MB	4x/day (A)	4 hours	B.1	AIRS
11	NCEP Reynolds Blended SST Weekly Product	NCEP	0.262 MB	Weekly (A)	4 days	B.0	MODIS, ASTER
12	(Deleted)						
13	(GPCP Monthly Gridded Raingauge Data Deleted)						
14	ISCCP B1 Data (geostationary satellite data only -- GOES-E, GOES-W, Meteosat, and GMS)	NESDIS/NCDC	7.2 GB	Monthly (A)[3]	14 days (processing and mailing delay)	B.0	CERES
15	NCEP Surface Flux Data	NCEP	4.1 MB	4x/day	4 hours	B.0	CERES
16	NCEP T62 Spectral Coefficients (sigma product)	NCEP	1.9 MB	4x/day	4 hours	B.0	CERES
17	(Deleted)						
18	(Deleted)						
19	NCEP 1-Degree Aviation Model (AVN) Product	NCEP	15.9 MB	2x/day (A)	7 hours	B.0	MODIS
20	NCEP SSM/I Daily Sea Ice Product	NCEP	0.302 MB -- 1 file @ 0.179 MB and 1 file @ 0.123 MB	Daily (A)	13 hours	B.0	MODIS
21	NCEP TOVS Ozone Daily Product	NCEP	0.098 MB	Daily (A)	13 hours	B.0	MODIS
22	NCEP TOVS Ozone Twice-Daily Product	NCEP	7.61 MB	2x/day (A)	7 hours	B.0	MODIS
23	ADEOS/NSCAT Overwater Surface Wind Vectors	NESDIS/CEMSCS	12 - 19 MB per file (205 MB per day)	12x - 14x per day (A)	60 minutes	B.0	MODIS

[3] Depending on data provider's schedule. Delivery by providers to NOAA/NCDC may require several months.

Abbreviations and Acronyms

ADC	Affiliated Data Center
ASF	Alaska SAR Facility
ASTER	Advanced Spaceborne Thermal Emission and Reflection Radiometer
CCB	Configuration Control Board
CDR	Critical Design Review
CDRL	Contract Data Requirements List
CEMSCS	Central Environmental Monitoring Satellite Computer System
CEOS	Committee on Earth Observations Satellites
CERES	Clouds and Earth's Radiant Energy System
CIESIN	Consortium for International Earth Science Information Network
COM	Common User
CSMS	Communications and System Management Segment
DAAC	Distributed Active Archive Center
DCN	document change notice
DID	Data Item Description
EBnet	EOSDIS Backbone Network
ECS	EOSDIS Core System
EDC	EROS Data Center
EDOS	EOS Data Operations Systems
EOC	EOS Operations Center
EOS	Earth Observing System
EOSDIS	EOS Data and Information System
EROS	Earth Resources Observation System
ESA	European Space Agency
ESDIS	Earth Science Data and Information System
F&PRS	Functional and Performance Requirements Specification
FOS	Flight Operations Segment
GOES	Geostationary Operational Environmental Satellite

GPCP	Global Precipitation Climatology Project
GSFC	Goddard Space Flight Center
ICD	Interface Control Document
IMS	Information Management System
IP	International Partners
IRD	Interface Requirements Document
IST	Instrument Support Terminal
JPL	Jet Propulsion Laboratory
LAN	Local Area Networks
LaRC	Langley Research Center
LSM	Local System Management
MISR	Multi-Angle Imaging Spectroradiometer
MODIS	Moderate-Resolution Imaging Spectroradiometer
MOPITT	Measurements of Pollution in the Troposphere
MOU	Memorandum of Understanding
NASA	National Aeronautics and Space Administration
Nascom	NASA Communications
NCDC	National Climatic Data Center (NOAA)
NCEP	National Center for Environmental Prediction (NOAA)
NESDIS	National Environmental Satellite, Data, and Information Service
NGDC	National Geophysical Data Center (NOAA)
NOAA	National Oceanographic and Atmospheric Administration
NODC	National Oceanic Data Center (NOAA)
NOLAN	Nascom Local Area Network
NSI	NASA Science Internet
NSIDC	National Snow and Ice Data Center
ORNL	Oak Ridge National Laboratory
PDR	Preliminary Design Review
PI	Principal Investigator
PSCN	Program Support Communications Network
SAA	Satellite Active Archives

SAR	Synthetic Aperture Radar
SDPS	Science Data Processing Segment
SEDAC	Socioeconomic Data & Applications Center
SMC	System Management Center
SOW	Statement of Work
TBD	To Be Determined
TBR	To Be Reviewed
TBS	To Be Supplied
TCP/IP	Transport Control Protocol/Internet Protocol
TRMM	Tropical Rainfall Measuring Mission
TSDIS	TRMM Science Data and Information System
TL	Team Leader
V0	Version 0
WAN	Wide Area Network

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